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PATENT ABSTRACTS OF JAPAN

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(21)Application number : 2000-158463 (71)Applicant : MARUWA KK

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(54) FUNCTIONAL MAT

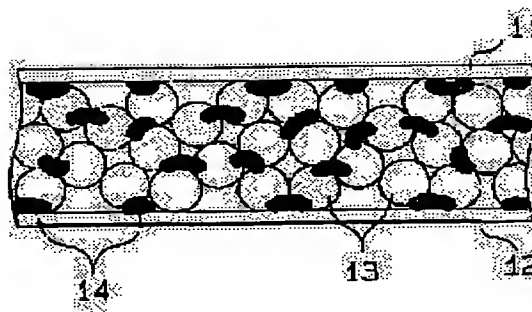
(57)Abstract:

PROBLEM TO BE SOLVED: To manufacture a functional mat exerting functions of a functional substance in a high degree and

having a reduced thickness, in regard to the functional mat having the functional substance such as a silica gel provided internally.

SOLUTION: A pair of upper and lower sheets 11 and 12 (mat body) of nonwoven fabric are laid on each other and numerous granular silica gels 13 as the functional substance and hot-melt powder 14 as ay hot-melt adhesive are held between the opposed surfaces of the two upper and lower sheets 11 and 12 so that they are layered between the two sheets and distributed

uniformly all over between the opposed surfaces of the two sheets. In this state, the portions of the two upper and lower sheets laid on each other are put through a pair of heated upper and lower pressing rollers 18 to be pressurized. Thereby the hot-melt



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powder 14 is melted by heating and the opposed surfaces of the two sheets are bonded together in the state of holding the silica gels 13 between them. Therefore the silica gels 13 are held immovably as layered between the two upper and lower sheets.

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rejection]

[Claim(s)]

[Claim 1] The functional mat by which adhesion immobilization of between the opposed faces of the mat object in the polymerization part is carried out with the heat colligative adhesion means while the functional matter of a large number which the mat object which makes the shape of a sheet piles up, and make the shape of a grain by the polymerization part is pinched.

[Claim 2] It is the functional mat according to claim 1 with which said heat colligative adhesion means are heat colligative adhesives which make the shape of a grain, and, as for the heat colligative adhesives, the mixed ratio is lessened as compared with the functional matter.

[Claim 3] Said heat colligative adhesion means is a functional mat according to claim 1 which is the heat colligative adhesives which make the shape of a sheet.

[Claim 4] The polymerization part of said mat object is a functional mat given in any or the first term among claim 1 which between opposed faces has pasted up thru/or claim 3 by being heated where said functional matter and heat colligative adhesives are pinched.

[Claim 5] Said functional matter is a functional mat given in any or the first term among claim 1 which consists of two or more kinds of functional matter containing silica gel thru/or claim 4.

[Claim 6] It is a functional mat given in any or the first term among claim 1 by which the polymerization part of said mat object consists of a sheet of a vertical pair, and one [at least] sheet is used as the ingredient which has permeability among vertical both sheets thru/or claim 4.

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention is used for for example, structural interior

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material, the configuration material of a subsistence store, etc., and relates to the functional mat which demonstrates the function which was excellent in hygroscopicity, deodorization property, etc.

[0002]

[Description of the Prior Art] Generally, in the building made from concrete, since indoor sealing nature is high, it is easy to produce dew condensation, and there is a possibility that an indoor wall, furniture, etc. may receive a bad influence with the moisture. Moreover, when indoor sealing nature is high, indoor ventilation surely becomes inadequate and there is also a problem that the meta xylene used for a plywood, formaldehyde, o-dichlorobenzene used for an insecticide are emitted into air, and is indoors full. Therefore, in recently, the functional mat which carried out the interior of the deodorant represented by the absorbent equipped with absorption functions, such as moisture absorption, adsorption, etc. represented by silica gel, and activated carbon is used as structural interior material, such as a flooring carpet and wall flare material.

[0003] For example, the mat object which consists of a nonwoven fabric which has permeability as wall flare material which carried out the interior of the silica gel piles up two sheets, and what joined with adhesives between both the mat objects that face where the silica gel of a large number which make the shape of a grain by the polymerization part is pinched in the shape of a layer is known (the first conventional example). Moreover, the silica gel of said large number is pinched between the mat objects which consist of a nonwoven fabric of a vertical pair, and what sutured both the mat object is known by giving needle punch to the polymerization part (the second conventional example).

[0004] And in said both examples, if it is used on the occasion of use, sticking on a concrete wall side so that one mat object may be on an interior-of-a-room side, the silica gel between both mat objects will absorb indoor moisture through a mat object.

[0005]

[Problem(s) to be Solved by the Invention] However, in the case of the conventional wall flare material mentioned above, there were the following problems. That is, in the first conventional example, there was a problem that the absorption function was sharply attenuated with adhesives by the silica gel which has an absorption function. That is, silica gel has much micropores on the front face, and demonstrates a high absorption function by the capillarity by these holes. However, when between both mat objects is joined with adhesives, a lot of adhesives in the gap of a silica gel grain which are a liquid or a fluid will enter, and will close many detailed holes which adhered on the surface of silica gel, and were described above. Therefore, depending on the silica

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gel with which the hole was closed with adhesives, absorbing became inadequate, and there was a problem that an absorption function fell sharply.

[0006] moreover, the functionality mat whole since the thickness (at least 3mm or more) for performing needle punch to the nonwoven fabric itself is the need in order to pinch silica gel in the second conventional example -- thick (7mm or more) -- it became a thing and there was a trouble that an application was limited.

[0007] It is to offer a functionality [with easy use] mat with little thickness while this invention is made in view of said trouble, is in the functional mat which carried out the interior of the functional matter and demonstrates the function of the functional matter highly.

[0008]

[Means for Solving the Problem] In order to solve said technical problem, while the functional matter of a large number which the mat object which makes the shape of a sheet piles up, and make the shape of a grain by the polymerization part is pinched, by invention of this application claim 1 concerning a functional mat, it is making to carry out adhesion immobilization of between the opposed faces of the mat object in the polymerization part by the heat colliquative adhesion means into the summary.

[0009] Moreover, invention of this application claim 2 is a functional mat according to claim 1, said heat colliquative adhesion means are heat colliquative adhesives which make the shape of a grain, and the heat colliquative adhesives make it the summary to lessen the mixed ratio as compared with the functional matter.

[0010] Invention of this application claim 3 is a functional mat according to claim 1, and said heat colliquative adhesion means makes it the summary to be the heat colliquative adhesives which make the shape of a sheet. Invention of this application claim 4 is a functional mat given in any or the first term among claim 1 thru/or claim 3, and the polymerization part of said mat object makes it the summary for between opposed faces to have pasted up by being heated where said functional matter and heat colliquative adhesives are pinched.

[0011] Invention of this application claim 5 is a functional mat given in any or the first term among claim 1 thru/or claim 4, and it is making for said functional matter to consist of two or more kinds of functional matter containing silica gel into the summary.

[0012] Invention of this application claim 6 is a functional mat given in any or the first term among claim 1 thru/or claim 4, and the polymerization part of said mat object consists of a sheet of a vertical pair, and it is making into the summary to use one [at least] sheet as the ingredient which has permeability among vertical both sheets.

[0013]

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[Embodiment of the Invention] (The first operation gestalt) The functional mat which is this invention is hereafter explained according to drawing 1 - drawing 4 about 1 operation gestalt materialized to the wall flare material which is one of the interior material for buildings.

[0014] As shown in drawing 1 , the wall flare material 1 as a functional mat in the first operation gestalt The sheets 11 and 12 (mat object) of a vertical pair with which the thickness of one sheet consists of a nonwoven fabric which is 0.5mm are piled up. Between the opposed faces of vertical both the sheets 11 and 12 As shown in drawing 2 , the silica gel 13 of a large number which make the shape of a grain as functional matter, and the hot melt powder 14 as heat colliquative adhesives are put. And such silica gels 13 and the hot melt powder 14 have composition put in said both sheets 11 and the condition that continued between [whole] the opposed faces between nothing and said both sheets 11, and 12, and the shape of a layer was distributed among 12 at homogeneity (drawing 2).

[0015] As for this silica gel 13, the diameter has the function in which the moisture absorbed under the desiccation ambient atmosphere by having the detailed through tube 1mm or less of a large number which it is granular and are not illustrated, respectively, and absorbing the moisture in air etc. by surface adsorption or capillarity under a high humidity ambient atmosphere may be emitted. Therefore, that to which 0.5-1.0ml [g] /and surface area have the detailed space volume in within the limits which is 650-350m²/g is adopted as the silica gel in this operation gestalt in order to obtain this absorption function and an emission function good. Moreover, the aperture of said detailed through tube is desirable when a 30-120A thing demonstrates an absorption function etc. good. On the other hand, although each grain is granularity with a diameter of 1mm or less in ordinary temperature, melting (it is also called fusion.) of the hot melt powder 14 is carried out with heating, and it demonstrates the adhesion effectiveness.

[0016] Although the hot melt powder 14 used with this operation gestalt shall be fused by heating at about 100 degrees, it is appropriate to use what carries out heating fusion as this hot melt powder 14 within the limits of about 80 to about 200 degrees. Moreover, the diameter of each grain of the hot melt powder 14 is desirable when using a thing smaller than the diameter of each grain of silica gel 13 fully demonstrates the absorption effect of silica gel 13.

[0017] Next, the manufacture approach of the wall flare material 1 constituted as mentioned above is explained according to drawing 3 . Drawing 3 simplifies and shows the production line of the above-mentioned wall flare material 1, and the roller 15 for top sheets which lets out the top sheet 11, and the roller 16 for bottom sheets which lets

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out the bottom sheet 12 are supported by the upstream of a production line pivotable.

[0018] The compression roller 18 of the vertical pair for pressurizing the downstream of a production line, where the top sheet 11 and the bottom sheet 12 are pinched is supported pivotable. Moreover, while the heater box 21 is established in the downstream of the compression roller 18 and the heating roller 22 of a pair is horizontally supported in the interior pivotable, the sticking-by-pressure roller 23 of the vertical pair covered with elastic bodies, such as rubber which a roller front face does not illustrate, is supported pivotable.

[0019] Furthermore, the winding roller 19 which rolls round the wall flare material 1 is supported by the downstream of the heater box 21 pivotable. On the other hand, the hopper 20 is formed in the downstream of said roller 16 for bottom sheets so that it may be located above the conveyance path of the bottom sheet 12 which it lets out from this roller, and in order to mix silica gel 13 and the hot melt powder 14 to homogeneity in the hopper 20 interior, the gear 24 for churning of a pair is formed horizontally pivotable. Moreover, the gear 25 for spraying which adjusts the irrelevance of silica gel 13 and the hot melt powder 14 is formed in the spraying opening upper part of a hopper 20.

[0020] For this reason, while the silica gel 13 and the hot melt powder 14 of a large number which make the shape of a grain by the gear 24 for churning of a pair in a hopper 20 are mixed to homogeneity and stored with the rate of a constant ratio, when said bottom sheet 12 passes the lower part of a hopper 20, the gear 25 for spraying operates and the mixture of silica gel 13 and the hot melt powder 14 is sprinkled in the shape of an optimum dose layer to up to the bottom sheet 12.

[0021] On the other hand, the top sheet 11 which it let out from the roller 15 for top sheets is led to a slanting lower part by the guide roller 17, and in case it passes through between the compression rollers 18 of a vertical pair, it is piled up to up to the bottom sheet 12 with which said silica gel 13 grade was sprinkled. That is, when it passes through between this compression roller 18, vertical both the sheets 11 and 12 will be piled up so that silica gel 13 and the hot melt powder 14 may be pinched from vertical both sides.

[0022] Here, silica gel is [the hot melt powder of the mixing ratio of silica gel 13 and the hot melt powder 14] about one to 3 in a weight ratio. Moreover, the thickness of the mixture of the silica gel 13 sprinkled on the bottom sheet 12 from a hopper 20 in this case and the hot melt powder 14 may be thicker than the thickness of the wall flare material 1 made into the purpose.

[0023] And that polymerization part is amended by the thickness equivalent to the gap

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width of face between vertical both the compression rollers 18 by carrying out through pressurization of the polymerization part of vertical both the sheets 11 and 12 in the condition of having pinched this silica gel 13 and the hot melt powder 14, between the compression rollers 18 of a vertical pair.

[0024] Moreover, after amending thickness with the compression roller 18, vertical both the sheets 11 and 12 are introduced into the heater box 21 with the condition of having pinched silica gel 13 and the hot melt powder 14, and the heating roller 22 of an order pair lets them pass. According to the melting temperature of the hot melt powder 14, heating maintenance of this heating roller 22 is carried out at extent which can fuse the hot melt powder 14. For this reason, while vertical both the sheets 11 and 12 draw the shape of reverse S character, carry out field contact at a heating roller 22 and passing, the hot melt powder 14 currently pinched by both the sheets 11 and 12 will be heated by the heating roller 22, and will be fused, and where silica gel 13 is pinched, between the opposed faces of vertical both the sheets 11 and 12 will paste it up.

[0025] Furthermore, while it has been in the condition which the hot melt powder 14 fused, when being let pass and pressurized by the sticking-by-pressure roller 23 of a vertical pair, let vertical both the sheets 11 and 12 be what has certain adhesion with the silica gel 13 and vertical both the sheets 11 and 12 by the hot melt powder 14.

[0026] For this reason, in the condition that silica gel 13 and the hot melt powder 14 were distributed over homogeneity, when a heating roller 22 heats said vertical both sheets 11 and 12 to predetermined temperature, the hot melt powder 14 fuses and the adhesion effectiveness is demonstrated, and when the sticking-by-pressure roller 23 pressurized further, while silica gel 13 had made the shape of a layer, it will be pinched by migration impossible between vertical both the sheets 11 and 12.

[0027] On the other hand, although the hot melt powder 14 carries out adhesion immobilization of between the opposed faces of vertical both the sheets 11 and 12 that pinch a silica gel grain, it compares the mixed ratio with silica gel 13. Since it is few, Even if extent shown in the front face of a silica gel grain by fusing adheres, since many gaps remained between silica gel grains and many of front faces of a silica gel grain are exposed in addition, it does not become closing the micropore of silica gel 13 to extent which bars the absorption function.

[0028] Therefore, according to the wall flare material 1 of the first operation gestalt, the following effectiveness can be acquired.

(1) Since the hot melt powder 14 is used for immobilization between vertical both the sheets 11 that pinch 13 grains of silica gels, and 12 for a mixed ratio rather than silica gel 13, lessening, the micropore of silica gel 13 is not closed but can manufacture the

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wall flare material 1 which demonstrates a high absorption function.

[0029] (2) Since it is not necessary to use a thick sheet like [in order to paste up junction between vertical both the sheets 11 and 12 with the hot melt powder 14 / at the time of the suture by needle punch] and a thin sheet can be used, the wall flare material 1 with the whole thickness thinner than before can be manufactured.

[0030] For this reason, the mat of not only applications, such as wall flare material conventionally limited from the reasons of thickness, but the invention in this application is considered as the covering 30 (drawing 4) of clothes, or it also becomes possible to use it as tattoo paper, the bag of leather goods, a bedding bag or the insole of shoes, the desiccation mat of a closet, a insect control sheet, etc. Furthermore, in order that the volume may decrease from the conventional wall flare material which demonstrates an equivalent absorption function, even when carrying and keeping the embodiment products (wall flare material etc.) of each [these] functional mat, the burden of transportation cost, a storage space, etc. is mitigated.

[0031] (3) Since there are many gaps, it becomes between 13 grains of silica gels with lightweight wall flare material. Therefore, the activity burdens in the case of stretching on the time of conveyance or the head lining etc. are mitigated.

(4) Since many gaps are generated between 13 grains of silica gels and hot melt powder 14 self also has flexibility, also in itself [wall flare material 1], it has high flexibility. Therefore, the wall flare material 1 is freely bendable at the include angle of arbitration, and even if it is the location of a right-angle part or an acute-angle part, it becomes possible to use it in accordance with the configuration of the part concerned, sticking wall flare material.

[0032] (5) Since the nonwoven fabric is used for a sheet, it is easy for the sheet front face of the wall flare material 1 to perform ornament processing of print processing, embossing, etc. Therefore, manufacture of the high wall flare material of design nature is attained.

[0033] (6) Since pinching immobilization of 13 grains of silica gels is carried out with vertical both the sheets 11 and 12 by which adhesion immobilization was carried out in between opposed faces with the hot melt powder 14, even if it cuts wall flare material in the location of arbitration, silica gel 13 does not fall. Therefore, cutting etc. can free the wall flare material 1 and it can consider as the configuration according to an application and a use part.

[0034] (7) Since silica gel 13 is pinched with the hot melt powder 14, it is not necessary to join the perimeter of wrap vertical both the sheets 11 and 12 for silica gel 13.

Therefore, laborsaving of a production process can be attained. Moreover, even if it is

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the case where the perimeter of a sheet is joined, selection of the various junction approaches, such as a suture, adhesion, and joining, is attained in the perimeter of a sheet, for example.

[0035] (The second operation gestalt) The second operation gestalt of this invention is explained according to drawing 5 - drawing 7 below. In addition, duplication explanation is omitted about the same configuration as said first operation gestalt, and the configuration which is mainly different from the first operation gestalt is explained.

[0036] With the second operation gestalt, a hot melt sheet is used as heat colliquative adhesives. As shown in drawing 5 , the wall flare material 2 as a functional mat in the second operation gestalt The sheets 11 and 12 (mat object) of a vertical pair with which the thickness of one sheet consists of a nonwoven fabric which is 0.5mm are piled up. Between the opposed faces of vertical both the sheets 11 and 12 It is supported so that the hot melt sheets 28 and 29 of two upper and lower sides may counter, and the silica gel 13 of a large number which make the shape of a grain as functional matter between the opposed faces of the hot melt sheets 28 and 29 further is put in the shape of a layer (drawing 6).

[0037] It has the shape of a sheet with a thickness of 0.3mm, and the shape of that surface type is formed in the shape of a stitch, and these hot melt sheets 28 and 29 are fused with heating, and demonstrate the adhesion effectiveness.

[0038] Next, the manufacture approach of the wall flare material which used the above-mentioned hot melt sheet is explained according to drawing 7 . Drawing 7 R> 7 simplifies and shows the production line of the above-mentioned wall flare material 2, and, unlike the first operation gestalt, the roller 26 for top hot melt sheets which sends out the roller 15 for top sheets and the top hot melt sheet 28 which send out the top sheet 11 to the upstream of a guide roller 17 is supported pivotable. Moreover, the roller 27 for bottom hot melt sheets which sends out the bottom hot melt sheet 29 is supported by the upstream of the roller 16 for bottom sheets pivotable.

[0039] The bottom hot melt sheet 29 which the top hot melt sheet 28 sent out from the roller 26 for top hot melt sheets was sent to the compression roller 18 via the guide roller 17, and was sent out from the roller 27 for bottom hot melt sheets is sent to the compression roller 18 via the roller 16 for bottom sheets.

[0040] Therefore, in case the top hot melt sheet 28 passes a guide roller 17, it is put on the top sheet 11 bottom, and in case the bottom hot melt sheet 29 passes the roller 16 for bottom sheets, it will pile up on the bottom sheet 12, and up-and-down hot melt sheets 28 and 29 and sheets (mat object) 11 and 12 will be sent to the compression roller 18 in the condition of having been superimposed for every upper and lower sides,

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respectively.

[0041] When only a silica gel grain is stored on the other hand by the hopper 20 formed in the downstream of the roller 16 for bottom sheets and the bottom sheet 12 and the bottom hot melt sheet 29 pass the lower part of a hopper 20, silica gel 13 is sprinkled in the shape of a layer to up to the bottom hot melt sheet 29.

[0042] And in the compression roller 18, vertical both the sheets 11 and 12 and vertical both the hot melt sheets 28 and 29 are piled up so that silica gel 13 may be pinched from vertical both sides. That is, the hot melt sheets 28 and 29 cover the silica gel 13 which makes the shape of a layer from vertical both sides, and sheets 11 and 12 serve as wrap structure in the vertical both sides further.

[0043] And it sets in the condition of having pinched the hot melt sheets 28 and 29 which covered silica gel 13. After amending the thickness through the polymerization part of vertical both the sheets 11 and 12 on the compression roller 18, The hot melt sheets 28 and 29 which have covered silica gel 13 if it lets it pass to the heating roller 22 of an order pair are heated, and it fuses. Silica gel 13 and both the sheets 11 and 12 are pasted up mutually, where silica gel 13 is pinched, between the opposed face pastes up vertical both the sheets 11 and 12, and silica gel 13 will be pinched by migration impossible between vertical both the sheets 11 and 12, with the shape of a layer made.

[0044] Although the hot melt sheets 28 and 29 carry out adhesion immobilization of between the opposed faces of vertical both the sheets 11 and 12 that pinch a silica gel grain and this, here Since a sheet has the shape of an eye of a network, even if there are few the mixed ratios as compared with silica gel 13 and extent shown in the front face of a silica gel grain by fusing adheres In addition, since many gaps remained between silica gel grains and many of front faces of a silica gel grain are exposed, it does not become closing the micropore of silica gel 13 to extent which bars the absorption function.

[0045] Therefore, according to the wall flare material 2 of the second operation gestalt, the following effectiveness can be acquired.

(1) Since it is not necessary to agitate silica gel 13 and heat colliquative adhesives to homogeneity, laborsaving of an activity is attained.

[0046] (2) Since heat colliquative adhesives intervene between silica gel 13 and vertical both the sheets 11 and 12, adhesion immobilization of silica gel 13 and vertical both the sheets 11 and 12 can be carried out certainly.

[0047] In addition, each above-mentioned operation gestalt may be changed as follows.

- As sheet stock, it may replace with a nonwoven fabric and materials, such as textiles, such as Japanese paper, western paper, and cotton, wool, or knitting, PP sheet, and

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perforated polyethylene, may be used. For this reason, the material according to an application can be chosen as a sheet at arbitration, and the high wall flare material of design nature can be realized.

[0048] - A material without permeability may be used for either of vertical both the sheets 11 and 12. If the material which has permeability in one side of vertical both the sheets 11 and 12 at least is used, it will become absorbable only from the inside of the room by using a material without permeability for a wall side as a sheet, for example from the ability of an absorption function being demonstrated as the wall flare material 1 whole.

[0049] - Thickness of a sheet may be thickened. Although thickness of one sheet was set to 0.5mm in the example, even if it is a sheet with a thickness of about 1.5mm, the wall flare material 1 whole will become thin. Therefore, the width of face of selection of the sheet which can be used for the wall flare material 1 will spread.

[0050] - As functional matter, activated carbon, charcoal, bamboo coal, calcined lime, or a deoxidant may be used other than silica gel 13. Thereby, not only an absorption function but a deodorization function etc. can be made into the wall flare material 1 which can be demonstrated further.

[0051] - A water absorption polymer may be put in as functional matter. Thereby, it can consider as the wall flare material 1 whose water absorption function improves further.

- The gap width of face of the compression roller 18 of a vertical pair may be changed. By this, whole thickness or a whole consistency can be changed and the wall flare material 1 can be manufactured.

[0052] - You may use it, changing the hot melt powder 14 or the hot melt sheets 28 and 29 into the thing of the class from which melting temperature differs. The wall flare material 1 and 2 can be manufactured by using the hot melt powder 14 or the hot melt sheets 28 and 29 which fuse silica gel 13 at temperature still lower when a wrap sheet is a low-melt point point, without carrying out melting of the sheet.

[0053] - The mixed ratio of silica gel 13 and the hot melt powder 14 may be changed. This becomes possible to change the flexibility or the hygroscopic ability of wall flare material 1 the very thing.

[0054] - The thickness of the functional matter which consists of the silica gel 13 and the hot melt powder 14 which were pinched by both the sheets 11 and 12 may be increased. Since adhesion immobilization is carried out using the hot melt powder 14 which is heat colliquative adhesives, the thickness of the above-mentioned functional matter does not serve as a limit on manufacture, but can consider as the thickness of arbitration. Thereby, the improvement in an absorption function or the increment in a

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consistency can be aimed at.

[0055] - The magnitude of 13 grains of silica gels and 14 grains of hot melt powder may be changed. The wall flare material which the consistency of silica gel 13 and the hot melt powder 14 changed can be manufactured by this, and modification of flexibility or an absorption function is attained.

[0056] - The wrap heater box 21 may be omitted for a heating roller 22 and the sticking-by-pressure roller 23. Thereby, maintenance check becomes easy.

- It is good even if sheets 11 and 12 are reverse in the path which passes a heating roller 22.

[0057] - The rubber which has covered the front face of the sticking-by-pressure roller 23 may be omitted, or you may change into other elastic members. By this, the width of face of material selection will spread.

- The shape not only of the shape of an eye of a network but a grid and 6 corniform are sufficient as the shape of surface type of the hot melt sheets 28 and 29, and the hole may not be prepared. The percentage of silica gel 13 and heat colliquative adhesives can be changed by changing the shape of surface type of the hot melt sheets 28 and 29.

[0058] - You may use it, changing the thickness of the hot melt sheets 28 and 29.

Although thickness used in the example the hot melt sheet which is 0.3mm, a still thicker hot melt sheet may be used.

[0059] - The hot melt sheets 28 and 29 with which thickness differs from a configuration by the upper and lower sides may be used. Adhesion of silica gel 13 and vertical both the sheets 11 and 12 can be performed with sufficient balance by making the bottom hot melt sheet 29 thinner than the top hot melt sheet 28.

[0060] Next, technical thought other than invention indicated to the claim which can be grasped from the above-mentioned operation gestalt and example of another is indicated below with those effectiveness.

(1) The manufacture approach of the functional mat which covers the both sides with a sheet after each sprinkles the mixture of the functional matter of a large number which make the shape of a grain, and heat colliquative adhesives in the shape of a layer, carries out heating immobilization in the gestalt which makes the shape of the layer and forms a lamellar body, and joins the perimeter of this sheet. After carrying out heating immobilization of silica gel and the hot melt powder, a material which contracts or fuses the both sides with heating with a sheet for a wrap reason can also be used as a mat object of a functional mat.

[0061] (2) Functional matter which cuts the lamellar body of functional matter TO which carried out adhesion immobilization with heat colliquative adhesives in

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predetermined magnitude, and is used for the case of another object etc. by the approach of the above (1), putting in. This replaces only the functional matter of the lost contents, and since a case is reusable, a case does not become useless.

[0062]

[Effect of the Invention] As explained in full detail above, according to this invention concerning a functional mat, it is in the functional mat which carried out the interior of the functional matter, and the functional mat with use there is little thickness and easy [both] which demonstrates the function of the functional matter highly can be offered.

[Brief Description of the Drawings]

[Drawing 1] The perspective view of the wall flare material of the first operation gestalt cut by predetermined magnitude.

[Drawing 2] The fragmentary sectional view of the wall flare material of the first operation gestalt expanding and showing a part.

[Drawing 3] The schematic diagram explaining the production line of the wall flare material as a functional mat in the first operation gestalt.

[Drawing 4] Covering of the clothes which used the functional mat of this invention.

[Drawing 5] The perspective view of the wall flare material of the second operation gestalt cut by predetermined magnitude.

[Drawing 6] The fragmentary sectional view of the wall flare material of the second operation gestalt expanding and showing a part.

[Drawing 7] The schematic diagram explaining the production line of the wall flare material as a functional mat in the second operation gestalt.

[Description of Notations]

1 -- The wall flare material in the first operation gestalt, 2 -- Wall flare material in the second operation gestalt, 11 -- A top sheet, 12 -- A bottom sheet, 13 -- Silica gel as functional matter, 14 -- The hot melt powder as heat colliquative adhesives, 15 -- The roller for top sheets, 16 [-- A hopper, 22 / -- A heating roller, 23 / -- A sticking-by-pressure roller, 28 / -- A top hot melt sheet, 29 / -- Bottom hot melt sheet] -- The roller for bottom sheets, 18 -- The compression roller of a vertical pair, 19 -- A winding roller, 20